December 14, 1952

Dear Norton:

I am delighted to hear of your substantial progress on the mouse-virulence problem. Are you sure that nothing can be found in vitro that would parallel the animal experiments?

Szybalski made up that quotation— I never said it, though I might well have meant it.

Sorry to have to press you so, but what I wanted as a "definition" of a lytic variant was just which phage and indicator systems you had in hand. I may have overlooked this in an earlier letter from you.

You may be interested in some more on lysogenization/transduction. This time the comparison concerns the incidence of lysogenicity in Gal^+Fla^+ (added) and in Gal^+Fla^- (transductions, from Gal^+Fla^-) selected on EMB Gal. The results: the added Gal^+ were 3 Lp^+:43 Lp^*; the transinduced Gal+ were 18 Lp+ : 3 [illegible]. The only trouble is that we do not know what limits the incidence of lysogenicity in this system. I have some other experiments in the works where the limiting factor is the amount of phage. The correlation seems already secure.

Your cryptic note some time ago $K_{phage} = K_{fa} = 80$ should, I take it, be interpreted as 80/minute, and not 80/second or 80/hour, in the expression $V = V_o e^{-ktc}$. Dave finally pulled out an FA serum he had started ages ago. It titrated, roughly, to about 50/min. I haven't so far checked your comparison of FA and phage.

I was interested to see whether one could not break up the action of the presumed $H_1^+ Fla_1^+$ complex in the linked transduction by means of UV. I was rather surprised to find that the inactivation of transduction was almost negligible (following the initial activation) even with tremendous doses. With such * exposures as 20 minutes (sic!) at 50 cm., phage titres of about 100 - 1000 /ml are associated with approximately equal or higher transductive activity. I've looked most at Gal+ from SW-666, using phage 22B, but Fla^+ behaves similarly, and one experiment with PLT22/2 on SW435 /D(o) gave essentially similar results (this is still incubating). One can easily count plaques and Gal+ on the same plate. I haven't tested the lysogenicity of the latter so far. This seems to be discrepant with your previous findings, but I can't find any record of them here. This might be useful in practice with other systems—e.g. your virulent mutant.

With Larry's help, I'm also looking into FA in lwoffates. SW-666(PLT22B) seems to be working moderately well; most other systems not. The phage so far has general transducing activity, but I'll send you the details when they're worked out.

Sincerely,

Joshua Lederberg

*undoubtedly overestimated owing to the possibility of multiplicity reactivation. The inactivation curve definitely flattens out as expected on this basis.

PS on stability of library